CLAIMS:

1. A method of preparing a dialkyl carbonate, comprising:

reacting an alkanol, oxygen, carbon monoxide, and a catalyst to form a mixture comprising a dialkyl carbonate, an alkyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide; and

removing alkyl chloroformate from said mixture.

2. The method of Claim 1, wherein said alkanol comprises a C_1-C_{12} alkanol.

3. The method of Claim 1, wherein said alkanol comprises a C_1-C_6 primary alkanol.

4. The method of Claim 1, wherein said alkanol comprises methanol.

5. The method of Claim 1, wherein said alkanol, said oxygen, and said carbon monoxide are reacted in a molar ratios of (about 0.5 to about 0.7 alkanol):(about 0.04 to about 0.06 oxygen):(about 0.8 to about 1.2 carbon monoxide).

6. The method of Claim 1, wherein said catalyst comprises a metal selected from the group consisting of iron, copper, nickel, cobalt, zinc, ruthenium, rhodium, palladium, silver, cadmium, rhenium, osmium, iridium, platinum, gold, mercury, and combinations comprising at least one of the foregoing metals.

7. The method of Claim 1, wherein said catalyst comprises copper.

8. The method of Claim 1, wherein said catalyst comprises chloride ion.

9. The method of Claim 1, wherein said catalyst comprises chloride ion and copper in a molar ratio of about 0.5 to about 1.5.

10. The method of Claim 1, wherein said reacting is performed in a single reactor.

11. The method of Claim 1, wherein said reacting is performed in a corrosion-resistant reactor.

12. The method of Claim 1, further comprising removing carbon dioxide and carbon monoxide from said mixture.

13. The method of Claim 12, wherein at least about 90% of said carbon dioxide and at least about 90% of said carbon monoxide are removed from said mixture.

14. The method of Claim 12, wherein said removing carbon dioxide and carbon monoxide comprises passing said mixture through a plurality of gas-liquid separation vessels.

15. The method of Claim 14, wherein said reacting is conducted at a first pressure, and said plurality of gas-liquid separation vessels comprises a first gas-liquid separation vessel having a pressure within about 10% of said first pressure, and a second gas-liquid separation vessel having a pressure less than about 20% of said first pressure.

16. The method of Claim 1, wherein at least about 80% of said alkyl chloroformate is removed from said mixture.

17. The method of Claim 1, wherein at least about 90% of said alkyl chloroformate is removed from said mixture.

18. The method of Claim 1, wherein at least about 95% of said alkyl chloroformate is removed from said mixture.

19. The method of Claim 1, wherein at least about 99% of said alkyl chloroformate is removed from said mixture.

20. The method of Claim 1, wherein said removing alkyl chloroformate comprises removing less than about 5% of said dialkyl carbonate.

21. The method of Claim 1, wherein said removing alkyl chloroformate comprises removing less than about 1% of said dialkyl carbonate.

22. The method of Claim 1, wherein said removing alkyl chloroformate comprises reducing the concentration of said alkyl chloroformate to less than about 500 parts per million by weight.

23. The method of Claim 1, wherein said removing alkyl chloroformate comprises reducing the concentration of said alkyl chloroformate to less than about 100 parts per million by weight.

24. The method of Claim 1, wherein said removing alkyl chloroformate comprises reducing the concentration of said alkyl chloroformate to less than about 30 parts per million by weight.

25. The method of Claim 1, wherein said removing alkyl chloroformate comprises utilizing at least one technique selected from the group consisting of heating, increasing pressure, increasing residence time, adding a polar solvent, adsorbing, separating with a membrane, pervaporating, passing through an ion exchange resin, exposing to a stoichiometric reagent, exposing to a catalytic reagent, and combinations comprising at least one of the foregoing techniques.

26. The method of Claim 1, further comprising removing hydrochloric acid.

27. The method of Claim 26, wherein said removing hydrochloric acid comprises reducing the concentration of said hydrochloric acid to less than about $1x10^{-3}$ moles per liter.

28. The method of Claim 26, further comprising vaporizing said mixture before said removing hydrochloric acid.

29. The method of Claim 28, wherein said vaporizing comprises heating said mixture, reducing the pressure applied to said mixture, or both.

30. The method of Claim 26, wherein said removing hydrochloric acid comprises passing said mixture through an acid removal column.

31. The method of Claim 26, wherein said removing hydrochloric acid comprises passing said mixture through an acid removal column and an ion exchange resin.

32. The method of Claim 1, wherein said method is operated continuously.

33. A method of preparing a dialkyl carbonate, comprising:

reacting an alkanol, oxygen, carbon monoxide, and a catalyst to form a mixture comprising a dialkyl carbonate, an alkyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide;

reducing the concentration of said alkyl chloroformate in said mixture to less than about 500 parts per million by weight while removing less than about 10% of said dialkyl carbonate; and

removing hydrochloric acid from said mixture.

34. A method of preparing a dialkyl carbonate, comprising:

reacting an alkanol, oxygen, carbon monoxide, and a catalyst to form a first mixture comprising a dialkyl carbonate, an alkyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide;

removing alkyl chloroformate from said first mixture to form a second mixture; and

removing hydrochloric acid from said second mixture.

35. The method of Claim 34, wherein said first mixture comprises a vapor of dialkyl carbonate and a vapor of alkyl chloroformate.

36. The method of Claim 35, further comprising condensing said vapor of dialkyl carbonate and said vapor of alkyl chloroformate.

37. The method of Claim 36, wherein said condensing said vapor of dialkyl carbonate and said vapor of alkyl chloroformate produces a single liquid phase.

38. The method of Claim 34, wherein said removing alkyl chloroformate comprises using at least one gas/liquid separator.

39. A method of preparing a dialkyl carbonate, comprising:

reacting an alkanol, oxygen, carbon monoxide, and a catalyst to form a first mixture comprising a dialkyl carbonate, an alkyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide;

removing hydrochloric acid from said first mixture to form a second mixture; and

removing alkyl chloroformate from said second mixture.

40. A method of preparing dimethyl carbonate, comprising:

combining methanol, oxygen, carbon monoxide, and a copper catalyst to form a first mixture comprising a vapor of dimethyl carbonate, a vapor of methyl chloroformate, hydrochloric acid, water, carbon dioxide, and carbon monoxide;

removing a portion of said carbon dioxide and a portion of said carbon monoxide from said first mixture to form a second mixture;

at least partially condensing said vapor of dialkyl carbonate and said vapor of alkyl chloroformate to form a third mixture;

removing at least about 90% of said methyl chloroformate and less than about 1% of said dimethyl carbonate from said third mixture to form a fourth mixture; and

removing hydrochloric acid from said fourth mixture.

41. A method of preparing a diaryl carbonate, comprising reacting a dialkyl carbonate with an aryl hydroxide, wherein the dialkyl carbonate is prepared according to the method of Claim 1.

42. A method of preparing a polycarbonate, comprising reacting a diaryl carbonate with a dihydric phenol, wherein the diaryl carbonate is prepared according to the method of Claim 41.